

## INTELLECTUAL PROPERTY ISSUES FOR THE GALILEO PROJECT

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### 1 Introduction

The application of Intellectual Property Rights (IPR) to activities occurring in outer space raises numerous legal questions, including in particular concerning issues such as sovereignty, jurisdiction, territoriality, conflict of law, forum shopping, etc. Such issues have been discussed by numerous authors.

Now the European Commission, the European Space Agency, and a consortium of European space manufacturers are contemplating an ambitious Global Navigation Satellite System (GNSS) baptised Galileo which will give a practical test case for demonstrating the applicability, and the limits thereof, of existing IPR legislation and doctrine.

The Galileo Steering Committee Working Group on Legal Issues, in a final report dated 29 November 2000, already points out a number of basic IPR issues which must be addressed, including :

- Existing third party rights, their potential impact on the economic viability of the system or even on the definition of the system architecture ;
- The heterogeneous IPR regimes currently applied by the various potential actors in Galileo : the EC, ESA, Member States and their National Space Agencies, and any other international organisations ;
- Questions of which applicable law, based on territorial considerations

on the one hand, and countries in which patents are filed on the other hand ;

- Potential conflict between IPR and standardisation ;
- Potential conflicts arising from basic differences between US and European intellectual property law.

The purpose of this paper is to dig deeper into these and adjacent questions which until now have been addressed only superficially by the Working Group. A few examples :

- Pre-existing third party rights – who conducts the survey of third party rights, what is the technical basis (system definition ) for such a survey ? And in the end, who will pay the royalties on any such third party IPR ?
- Unpublished third party rights (18 month waiting period before publication of a patent application), and third party rights generated by competitors contemporaneously with the system definition phase.
- IPR generated within the program : who own what ? Who decides on royalties and who collects them ? Is this a viable revenue stream for Galileo ? Who has the right, or the responsibility for enforcement of IPR ? Who can initiate, or veto litigation ? who pays for litigation ?
- Applicable law for the space segment.
- System definition considerations – in view of third party rights (design around), on the one hand; in view of the business plan on the other hand, e.g. IPR structure in view of expected revenue streams.

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### Third party IPR

The Galileo project for satellite assisted navigation arrives in a sector where considerable industrial activity has been occurring for a number of years. As for any such newcomer system in a world with already well-established competitors, a viable business plan must take into account existing third party rights for the balance sheet.

In particular, the US Global Positioning via Satellite (GPS) system has generated several thousand patent filings over the last decade or so, many of these in the consumer mass market segment.

Product clearance studies of third party rights are commonly conducted by IPR specialists, either in the definition phase of a new product or prior to its release on the market. It is wise to introduce such information at an early stage to avoid redesign which may become necessary at a later stage to avoid costly third party IPR liabilities. Such a study involves several main steps.

First a documentary search is conducted in the relevant patent data bases, which may include for example Derwent (world wide), EPAT (European patents), IFIPAT (US patents), JAPIO (Japanese patents), etc. Such a study may start from keywords, from company names, or any other relevant criteria. Except for the US patents, which are only published once the patents are granted, this first search will generally reveal a majority of patent applications which have not yet been granted.

In a second step, one tries to extract the economic relevance from the documents which have been identified. This step requires more than a rudimentary description of the project, as the technical features must be accurately compared with the documents and in particular with the features of the claims.

At this point, the main holders of relevant third party IPR can be identified. The number of players is important, as

each will claim its royalties independently from the others, thus these royalties shall add up. It may also be necessary to attempt to form an idea of the patent validity of some of the more pertinent documents, a rather delicate task.

For the Galileo project, several different sectors of activities are concerned, each with its specific characteristics. For example, the space segment, the ground segment, the professional terminals with service integrity guarantees, and consumer terminals for the mass market. The competitors will be quite different in each market segment, as will the holders of the relevant third party IPR. This means that the royalty conditions which must be anticipated to assess overall system viability will differ from one equipment market to another.

The services markets will have to be examined separately, especially in view of the recent trend in the US of patenting of business methods.

It should also be mentioned that since patent applications are kept secret for 18 months before publication, that some relevant third party IPR may become known only later on. Thus a continuous surveillance of third party IPR should be maintained up until system deployment at least.

In a final, vital stage, the business model must be adjusted, and perhaps the system design as well, to take into account the existing third party IPR and its overall economic impact in terms of royalties to be paid out. This is not strictly speaking an IPR task.

The European Commission has committed to fund a survey of third party rights for the Galileo system under the 5<sup>th</sup> Framework program for Research and Development, simultaneously with the development phase of the Galileo infrastructure. In a first step, this survey will concentrate on the US competing system, GPS (Global Positioning via Satellites).

## IPR issues among the Galileo players

IPR has been mentioned in preliminary scenarios as having potential for generating revenue streams. This begs the question of the contractual relationships between the various actors, which must be carefully constructed in order to ensure that any resulting revenue streams will flow in a manner to enhance the economic viability of the project.

This task consists in first identifying where relevant IPR may be generated and by which actors. In general this will be from industrial players.

The next, key question, is how will the IPR generated by industrial players be circulated to the other actors in the project, and how will the resulting revenues be distributed ?

Several standard types of relationships between industry and institutions exist as models. But may these existing models be readily applied within the framework of the Galileo project ? Each agency or institution which will be involved has its own historical standard IPR relationships with industry, and these differ considerably from one institution or agency to another. This also depends on the funding mechanisms which are contemplated.

The spectrum of existing standard conditions runs from agency ownership of IPR generated under agency funding (as practised by the Italian Space Agency, for example), to full ownership with the industrial partner and only a free license for use to the funding agency (as practised by the French National Space Studies Centre). Collaborative programs such as the EC Framework items typically arrange for free licenses among all of the collaborating firms and institutions. ESA general conditions foresee free licenses to all European actors for European programs, and royalties to ESA for transfer or sale outside the Member States. ESA co-financed programs have different rules, currently under discussion. In the case of the PPP, such questions shall have to be

carefully considered to the satisfaction of the parties.

Last but not least, it will be necessary to agree on how the costs of obtaining and wielding IPR will be distributed among the actors, which is every bit as important as how the benefits will be divided up.

All of this will need to be catalogued, assessed, and finally harmonised in order to give a transparent view on the structure of the IPR generated within the program, its ownership, licensing commitments, and the resulting circulation of royalties among the various actors.

## Planning for sustainable growth

Once the groundwork has been laid by achievement of the above outlined tasks, the question of sustainability may be addressed. A scenario which brings us up to T=0, and works at T=0, needs to be projected into the future. The IPR scenario should also take into account future evolution of the system itself, possible changes in the competitive environment, perhaps in the relationships among the partners, and insurance of the integrity of the revenue streams that the long term success of the business plan relies upon.

One important consideration in this respect, as concerns IPR as a basis for revenue streams, is enforcement of that IPR, the collection and distribution of royalties, and prosecution of infringing entities for non payment of royalties if that occurs. Specific arrangements should be examined and adopted by the partners to foresee the accomplishment of these vital tasks to protect the expected revenue streams, for without a clearly identified enforcement mechanism, those revenue streams may just dry up.

One possible scenario, strongly recommended by the present author, would be to create a Galileo "patent pool". Such a mechanism is traditionally foreseen within the context of a standardisation body, which for Galileo, could be the European Telecommunications Standards

Institute (ETSI). Alternatively, a new legal entity, specific to Galileo, could foster such a patent pool.

The patent pool schema could lead to a convenient manner to handle the remuneration of third parties holding pre-existing intellectual property relevant to the Galileo system or its various components, as well as acting as a "one-stop" licensing clearing house for the foreground IPR generated by the actors of the Galileo effort itself.

### Current Legal Framework for IPR

Outer Space lies outside of all national territories, thus outside of the natural territorial jurisdiction of classical municipal patent law. Only the US has legislated to extend the applicability of its domestic patent law to space objects under jurisdiction or control of the US, wherever they may be found in outer space, via the US Space Bill which effectively extends US jurisdiction for patent matters onto orbit under certain conditions. However this consideration would only be relevant for the space segment of Galileo.

Currently, no other nation besides the US has extended its municipal patent law into outer space. Thus only a US patent could effectively be enforced on orbit. Fortunately, for the Galileo system, this should not be a major handicap. Economically, the space infrastructure should cost less than a few billion euros investment over about a five-year period. Whereas the terrestrial markets are projected at about 100 billion euros for user equipment, and 100 billion euros for value added services, over a twenty-year system lifetime. So terrestrial intellectual property law is finally more relevant for Galileo that space law would be.

However terrestrial intellectual property law is not without its pitfalls in such a global system. In particular, the royalties to be paid concern the acts of manufacture or sale within the territory where a patent exists. And of course this will more often than not, be a territory other than Europe. Even the most casual search in the patent data bases,

using "GPS" as a key word, reveals that far more GPS patents have been filed in Japan than in the whole rest of the world, for a United States, military system.

This is because the largest market is consumer terminals, and Japanese electronics manufacturers really know how to make money in such a market. Further, more and more Japanese electronics firms are manufacturing almost exclusively offshore, for example in China or Korea.

In conclusion on this point, the future holders of patent rights who wish to obtain handsome royalties from the patent pool, would be well advised to carefully consider the countries in which they should file their patents.

### Possible conflict with standardisation

Under the hypothesis that a patent pool is created under the auspices of some standardisation body, whether already existing or created specifically for Galileo, the existence of prior third party rights could prove to be troublesome far beyond mere royalty expense.

If a patentee holds Galileo standard essential patents, and refuses to license on reasonable, non-discriminatory terms, or refuses to license at all to one or more Galileo industry players, then the whole scheme could grind to a halt. In such a case, there may be no alternative but to redesign the Galileo system so that it does not infringe that withheld IPR.

### First to file vs. First to invent

Patent practitioners have long been aware of a potential lack of legal certainty on the ownership of IPR protected by a valid US patent. This is because in the United States, unlike every other country in the world, the entitlement to a patent is granted to the "first to invent", even if that inventor was not the first to file a patent application.

In practice, this means that when filing an application in the US on one or another component of the Galileo system, one cannot be sure that another subsequent applicant could not be awarded a patent on

the same invention, on the basis of evidence that he had made the invention prior to the first filing date. US firms are particularly adept in the use of this mechanism, called "swearing back". European firms, on the other hand, are at a distinct disadvantage in the use of swearing back, as they generally do not constitute and preserve evidence of an invention date well prior to the actual filing or the Paris Convention priority date.

### Conclusions and further work

Much work remains to be done on this topic before the IPR situation can be optimised for the Galileo system. A one-year study project is foreseen to start imminently under the auspices of the European Commission. However the IPR working group needs input from other developing efforts which are occurring in parallel.

For example, a thorough and accurate survey of relevant third party IPR requires a fairly clear technical description of the contemplated system. This is currently under development, so cannot be described exactly and in detail.

Another example is the legal structure of the Galileo project, the contractual relations between the various actors, the creation of new legal entities. In order to contemplate the creation of a patent pool, it seems necessary to know who will own the Galileo constellation, who will run it, and who will collect the revenues, taxes, and service fees. Only then could one imagine how to derive royalty revenues from those revenue streams.

Work will begin shortly on all of those topics, as well as other legal topics necessary for the economic viability of the system. So next year at this time we should have significant progress to report.